Title (en)

Pattern formation in the fabrication of microelectronic devices

Title (de)

Mustererzeugung in der Herstellung von mikroelektronischen Anordnungen

Title (fr)

Formation de motifs pour la fabrication de composants micro-électroniques

Publication

EP 0686999 A3 19970820 (EN)

Application

EP 95108351 A 19950531

Priority

US 25069194 A 19940531

Abstract (en)

[origin: US5460693A] An all-dry microlithography process, where a fluorinated layer 30 is deposited on a processable layer 18 of a semiconductor wafer, and regions of the fluorinated layer 30 are exposed to a masked radiation source so that exposed regions and unexposed areas 31 are formed in the fluorinated layer 30. An oxide layer is grown on the fluorinated layer, forming thicker region 34 of oxide on the unexposed areas 31 of the fluorinated layer 30, and forming thinner regions 32 of oxide on the exposed regions of the fluorinated layer 30. The oxide layer is then etched, removing thinner regions 32 of the oxide layer but leaving at least a fraction of the thicker portions 34 of the oxide layer to be used as a patterned hard mask. Then the exposed fluorinated layer not covered by the patterned oxide hard mask, is etched, to expose areas of the processable layer 18 not covered by the oxide hard mask, for subsequent patterned processing. The subsequent patterned processing may be an etch process for pattern transfer to the processable layer, a doping process to dope the exposed regions of the processable layer, or another process such as a deposition step. The all-dry lithography process can be completed in an integrated environment, such as a cluster tool, resulting in improved manufacturing cycle time and increased yields. The dry photosensitive layer may be deposited using PECVD at low temperatures, and is compatible with all other semiconductor device fabrication process flows.

IPC 1-7

H01L 21/033; H01L 21/321; G03F 7/00

IPC 8 full level

G03F 1/08 (2006.01); **G03F 7/004** (2006.01); **G03F 7/26** (2006.01); **G03F 7/36** (2006.01); **G03F 7/38** (2006.01); **G03F 7/40** (2006.01); **H01L 21/027** (2006.01); **H01L 21/033** (2006.01); **H01L 21/302** (2006.01); **H01L 21/3065** (2006.01); **H01L 21/308** (2006.01); **H01L 21/3105** (2006.01); **H01L 21/3213** (2006.01)

CPC (source: EP KR US)

G03F 7/0042 (2013.01 - EP US); **G03F 7/265** (2013.01 - EP US); **H01L 21/027** (2013.01 - KR); **H01L 21/0332** (2013.01 - EP US); **H01L 21/0337** (2013.01 - EP US); **H01L 21/3086** (2013.01 - EP US); **H01L 21/3105** (2013.01 - EP US); **H01L 21/32139** (2013.01 - EP US); Y10S 430/167 (2013.01 - EP US); Y10S 430/168 (2013.01 - EP US); Y10S 438/911 (2013.01 - EP US); Y10S 438/942 (2013.01 - EP US); Y10S 438/95 (2013.01 - EP US); Y10S 438/981 (2013.01 - EP US)

Citation (search report)

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- [A] PATENT ABSTRACTS OF JAPAN vol. 6, no. 262 (P - 164) 21 December 1982 (1982-12-21)

Designated contracting state (EPC)

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DOCDB simple family (publication)

US 5460693 A 19951024; DE 69531472 D1 20030918; DE 69531472 T2 20040219; EP 0686999 A2 19951213; EP 0686999 A3 19970820; EP 0686999 B1 20030813; JP 3393958 B2 20030407; JP H08179519 A 19960712; KR 100375908 B1 20030408; KR 950034481 A 19951228; TW 368758 B 19990901; US 5700628 A 19971223

DOCDB simple family (application)

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